

WARNING

Because of possible shock or fire hazards, connection of this instrument should be performed in compliance with the National Electric Code (ANSI C1) or any other requirements, or both, which may be applicable to the user. Installation, operation, and maintenance should only be performed by qualified personnel.

TM-112100-G4

VOLUME 1-- OPERATOR'S MANUAL

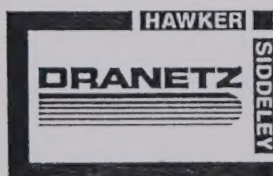
SERIES 626
UNIVERSAL DISTURBANCE ANALYZER
MODEL 626G

1 September 1989
(Rev. A: 1 October 1989)

See opposite side relative to proprietary rights.

*NOTE: Refer to Volume 2 of TM-112100-G4 for
Service and Maintenance instructions.*

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DRANETZ TECHNOLOGIES, INC.
1000 New Durham Rd.
Edison, New Jersey 08818
(201) 287-3680

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USER INFORMATION

The Series 626 system is U.L. listed provided that the Mainframe and all plug-ins used are U.L. listed (as indicated by a U.L. listed marking on the Mainframe and each individual plug-in).

Series 626 plug-ins that do not bear the U.L. listed marking are not U.L. listed. Although these plug-ins have been designed for use with the Series 626 and will function properly, such use will void the U.L. listing of the entire Series 626 system.

This equipment generates, uses, and can radiate radio frequency energy. If it is not installed in accordance with this instruction manual, it may interfere with radio communications. The equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. If, however, operation of this equipment in a residential area causes interference, the user, at his or her own expense, must take whatever measures are necessary to correct the interference.

IMPORTANT

The recommended calibration interval for this unit is once every **12 MONTHS**. For optimal operation, it is recommended that the unit's internal battery pack be replaced once every **2 YEARS**. Refer to Section III, OPERATIONAL TEST, for information on unit calibration and battery replacement.

STATEMENT OF WARRANTY

All products of Dranetz Technologies, Inc. are warranted to the original purchaser against defective material and workmanship for a period of one year from the date of delivery. Dranetz will repair or replace, at its option, all defective equipment returned, freight prepaid, during the warranty period, without charge for repair, provided there is no evidence that the equipment has been mishandled or abused. This warranty shall not apply to any defects resulting from improper or inadequate maintenance, buyer-supplied hardware/software interfacing, any unauthorized modification or misuse of the equipment, operation outside of the environmental specifications, or improper site preparation or maintenance.

The information in this manual has been reviewed and is believed to be entirely reliable. No responsibility, however, is assumed for any inaccuracies. The material in this manual is for information purposes only, and is subject to change without notice.

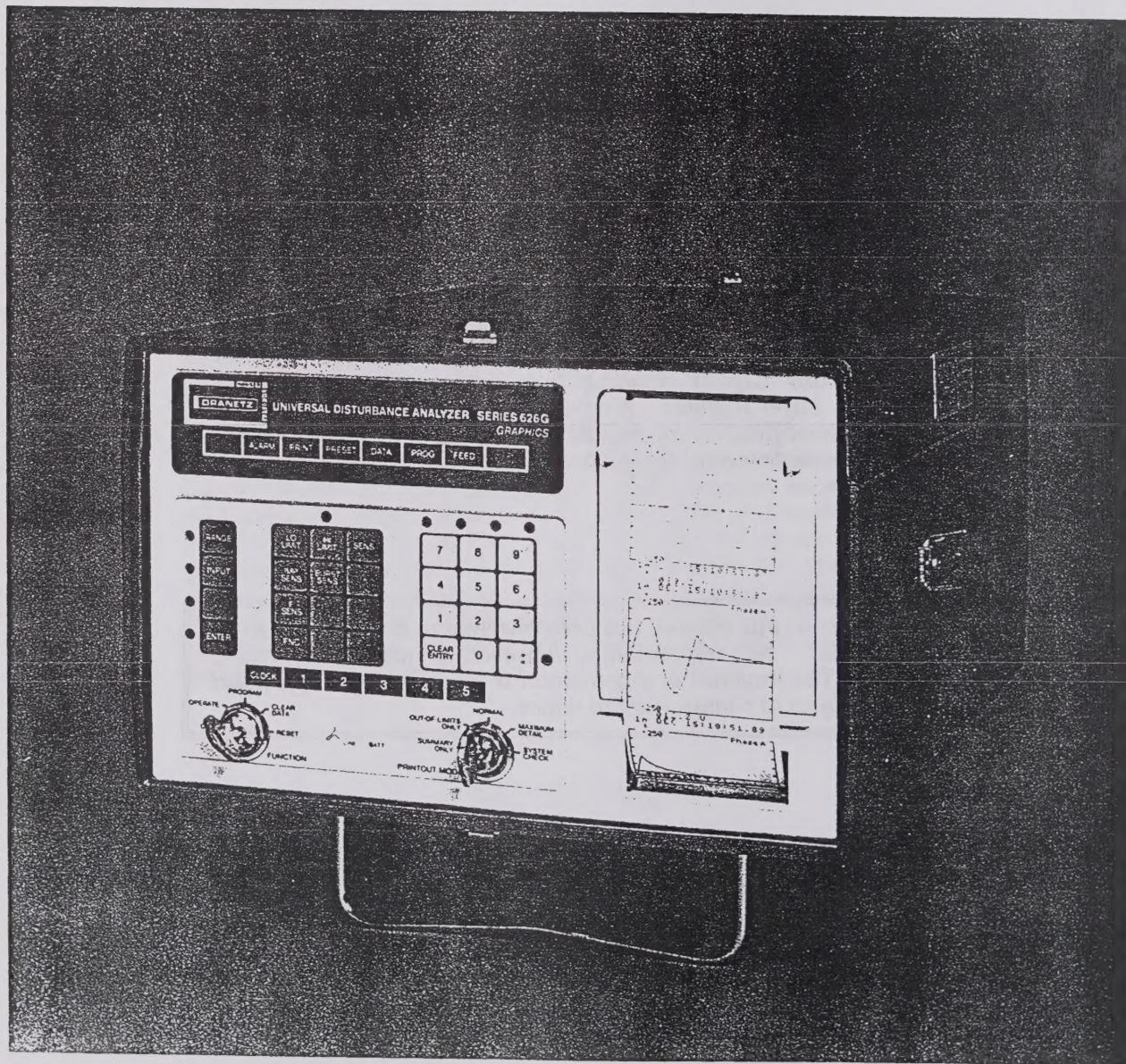


FIGURE 1-1. 626G UNIVERSAL DISTURBANCE ANALYZER.

VOLUME 1 OPERATOR'S MANUAL

SERIES 626 UNIVERSAL DISTURBANCE ANALYZER MODEL 626G

SECTION I GENERAL INFORMATION

1.1 SCOPE

The manual for this product consists of two volumes. Volume 1, the Operator's manual you are reading, is divided into three sections:

- I. GENERAL INFORMATION
- II. INSTALLATION AND OPERATION
- III. OPERATIONAL TEST

Volume 2, the Service manual, contains the maintenance instructions and consists of four sections:

- IV. THEORY OF OPERATION
- V. MAINTENANCE AND CALIBRATION
- VI. REPLACEABLE PARTS
- VII. SCHEMATICS AND ASSEMBLIES

1.2 INTRODUCTION

This manual contains operation instructions for the Model 626G Universal Disturbance Analyzer, also referred to in this manual as the 626G, or Mainframe. (See FIGURE 1-1 on the facing page.) The 626G is a microprocessor-based, universal-type unit, capable of holding up to five Dranetz Series 626 plug-in modules.

The Mainframe provides all system functions, including power and real-time clock, for its plug-in modules. All of its characteristics and operations are described in the context of this manual. The operations and functions of the individual plug-in modules are described in their own separate manuals.

1.2.1 Information on Reading Plug-in Manuals

The majority of the plug-ins are universal in that they can be used with any model in the Series 626 family of Mainframes. (Certain plug-ins are dedicated to certain mainframes.) When reading the plug-in manuals, the terms "Series 626" and "Mainframe" include this unit.

NOTE

In the plug-in manuals, two types of printouts are placed side-by-side whenever a printout is illustrated. The side-by-side printouts depict the two ways the different Mainframe models print. The Model 626G prints from the top down, and therefore its printout is read from the top down. In the plug-in manuals, read the printouts of the "626G".

The 626G has a membrane keyboard. In this manual, the black touch-keys are called buttons, and the red, green, and yellow touch-keys are called keys. Note that in some of the older plug-in manuals, these same terms may not have been used. In such cases, refer to the name of the key (such as ENTER key or ENTER push button, etc.) to identify the key being referred to.

1.3 PURPOSE AND APPLICATIONS

The 626G has many applications including monitoring, measuring, recording, and printing disturbances in ac power, dc power, temperature and humidity, radio frequency, and so forth. Details of these and other specific functions of this universal instrument are found in the individual plug-in manuals.

1.4 MAINFRAME DESCRIPTION

The plastic casing containing the 626G Mainframe is approximately 7" high by 12" wide by 15½" deep. The power supply and communication ports protrude approximately one additional inch from the back of the Mainframe.¹ The back of the Mainframe contains five slots for housing the various 626 plug-ins. (When not in use, these slots are covered by a panel strip.) The Mainframe and its plug-ins are programmed either from the front panel controls or through remote communications. Data collected is stored in a 256-byte memory buffer² until it is either printed to the Mainframe's thermal printer or sent to the serial port³. These features and others are discussed in the following paragraphs.

¹For overall dimensions see Table 1-4, Mainframe Specifications.

²Available plug-ins contain an expanded memory buffer.

³If the thermal printer is off and an RS-232 cable is connected to the unit's communication (serial) port, all data is sent to the serial port. If the thermal printer is on and an RS-232 cable is connected to the unit's communication (serial) port, data is sent to both the serial port and the thermal printer simultaneously. If there is no connection to the communication port, the printer is turned on unless the paper is low.

1.4.1 Front Panel Controls and Indicators

The front panel of the Mainframe contains all operating controls and indicators used for operating the plug-ins (refer to FIGURE 2-1). All keys and buttons are sealed membranes. The two horizontal groups of black buttons, as well as the FUNCTION and PRINTOUT MODE key switches, perform common Mainframe functions, some specifically related to the particular plug-ins installed.

The yellow numerical keys are used for both Mainframe and plug-in module functions, while the two left-side groups of keys (red and green keys) are plug-in module related. (The one exception to this is the green ENTER key, which is used for both Mainframe and plug-in module functions.)

To simplify programming, LED indicators adjacent to the three centrally located key groups cue the Operator during the programming steps. During the interactive programming sequence, the indicators light when keys should be pressed, and go out one by one as the Operator makes the selections.

1.4.1.1 Audible Feedback of Pressed Keys

Each keystroke is accompanied by an audible "click" to indicate that a key entry has been detected. This sound does not necessarily guarantee that the proper command or key entry has been made; it only indicates that one of the keys has been pressed and is registered.

1.4.2 Thermal Printer

A thermal printer at the lower right-hand corner of the front panel (see FIGURE 2-1) provides a printout of alpha-numeric and graphical data supplied to the Mainframe as a function of the specific plug-ins. The paper supply is accessible behind the hinged cover. The high-speed printout may be switched off at will by the Operator, although disturbance data continue to be measured and stored.

When the paper supply becomes low, a "PAPER LOW" message is printed and the unit is switched to the SUMMARY ONLY Mode⁴ to conserve paper.⁵ A daily summary of disturbance data accumulated during the previous 24-hour interval is automatically printed at midnight.

Since the 626G is equipped with an RS-232C interface, data may still be transferred to a remote printer or a peripheral device.⁶

⁴ In the SUMMARY ONLY Mode, individual events are not printed out; instead the total number of each type of event for each plug-in is recorded and printed out in a daily summary at the end of the day.

⁵ The 626G will not output data during remote communication if the paper is low and the thermal printer is turned on. In this case, turn the printer off using remote command Z.

⁶ The Mainframe and the remote device connected to the Mainframe must be set to the same baud rate. The factory default setting of the 626G is 1200 baud (unless purchased with the 6037/6038 Communication Module). Refer to TM-112100-G4 Volume II, the Service/Maintenance Manual, for instructions on changing the baud rate.

1.4.2.1 The Paper Take-Up Feature

The paper take-up feature provides convenient storage of all data and messages printed on an entire roll of paper. As printing occurs, paper is fed from a supply roll through the printhead to a take-up spool. Between the printhead and the take-up spool, the paper passes up along the unit's front panel, leaving approximately 5½ inches of paper visible from the front of the unit. Paper that has been rolled onto the take-up spool may be read by gently pulling the paper out from the TOP of the unit until the desired portion of the tape becomes visible. The [FEED] button may be pushed to rewind the paper back into the unit, or to advance the paper for better viewing of the last line printed.

CAUTION

Never pull the paper from the bottom of the paper feed slot.

1.4.2.2 Changing the Thermal Paper

Refer to the Printer Paper Reorder form enclosed in your Operating manual for paper reordering instructions. If this form is missing, thermal paper may be reordered from:

Dranetz Technologies, Inc.
Attn: Order Entry
1000 New Durham Road
Edison, N.J. 08818
(201) 287-3680

During operation, if the paper becomes low, the 626G prints:

PAPER LOW SUMMARY ONLY

Operation is then shifted to the Summary Only Mode, regardless of the PRINTOUT MODE key switch setting, indicating that the paper roll should be replaced. After the paper is replaced, the 626G reverts back to the setting of the PRINTOUT MODE key switch.

NOTE

In the Summary Only Mode, normal printouts of disturbance data are inhibited and only the accumulated daily summary is produced. Therefore, if it is anticipated that a large number of disturbances will occur during a period of unattended operation DO NOT wait for a paper low condition to install a new roll of paper--install one beforehand.

To remove a low or used up paper roll:

- 1) Press [FEED] to advance the paper approximately four inches. Cut off the paper at the blank area just created.
- 2) Open the printer door by pulling the two knobs on the top of the door. Remove the take-up spool (forward spool) by gently bending the right hand spring clip outward and sliding the spool off its slot.
- 3) To remove the paper from the take-up spool, hold the wound up roll firmly in your right hand. With your left hand, turn the wheel of the spool a few rotations in the opposite direction than the paper is wound (this loosens the beginning tab of paper from the slot in the spool). Slide the roll off the end of the take-up spool and reinsert the spool in the printer.
- 4) If there is still paper left on the supply roll (rear spool), cut the paper between the supply roll and the feed rollers before removing the roll. Remove the supply roll by gently bending the spring clips outward. Discard the roll and any unused paper still attached.
- 5) Press [FEED] to eject any remaining paper between the rollers.

Before replacing the thermally sensitive paper, clean the printhead as described in Subsection 1.4.2.4.

CAUTION

Use of thermal paper other than Dranetz P/N 102714 may result in damage to the printer.

To replace the paper roll:

(The steps outlined below assume the printer door is still open from removing the paper roll as described above.)

- 1) Pull off one or two feet from a new roll of thermal paper and, using the brackets on the inside of the door as a guide, insert the end of the paper into the unit until it comes into contact with the internal rollers. (A decal on the printer door provides instructions for loading rolls of paper.) Press [FEED] until the paper is firmly between the rollers; then mount the roll between the clips of the rear spool.
- 2) Press [FEED] to advance the paper approximately two feet. Fold end of paper in a "V" shape (making a point). Insert the folded end of the paper into the slot on the take-up spool. Rotate the spool while leaving several inches of slack.
- 3) Close the printer door. Press [FEED] to take up the slack.

1.4.2.3 Removing a Portion of a Roll of Paper

To remove a portion of a roll of paper after a monitoring session, proceed as follows:

- 1) Press [FEED] to advance the paper approximately four inches. Cut off the paper at the blank area just created.
- 2) Open the printer door by pulling the two knobs on the top of the door. Remove the take-up spool (forward spool) by gently bending the right hand spring clip outward and sliding the spool off its slot.
- 3) To remove the paper from the take-up spool, hold the wound up roll firmly in your right hand. With your left hand, turn the wheel of the spool a few rotations in the opposite direction than the paper is wound (this loosens the beginning tab of paper from the slot in the spool). Slide the roll off the end of the take-up spool and reinsert the spool in the printer.
- 4) Press [FEED] to advance the paper approximately two feet. Fold end of paper in a "V" shape (making a point). Insert the folded end of the paper into the slot on the take-up spool. Rotate the spool while leaving several inches of slack.
- 5) Close the printer door. Press [FEED] to take up the slack.

1.4.2.4 Cleaning the Printhead

It is recommended that the printhead be cleaned each time a thermal paper roll is replaced. Pre-cut cleaning paper is available from Dranetz Technologies, Inc. (P/N 103418). Also, during the course of normal printer operation, particles from the thermal paper accumulate on the printhead and, after a period of time, can result in poor print quality. If printed characters appear too light to read or have dots missing, the printhead should be cleaned.

Cleaning the printhead is accomplished by removing the thermal paper and inserting a strip of bond paper (cut to approximately 11 inches long by 2¼ inches wide) into the printer and continually pressing [FEED] until the length of paper passes through the printer. The bond paper is inserted in the same manner as a replacement paper roll.

1.4.3 Audible Alarm/External Alarm Contacts

When the alarm circuits within the Mainframe are enabled by the Operator, a 1-second audible alarm sounds each time a disturbance or event change is detected (depending on modules installed). A pair of normally open dry contacts, accessible on a rear Communication Panel (Options Connector J1), may be used to activate a remote alarm (refer to Subsection 1.4.8.2).

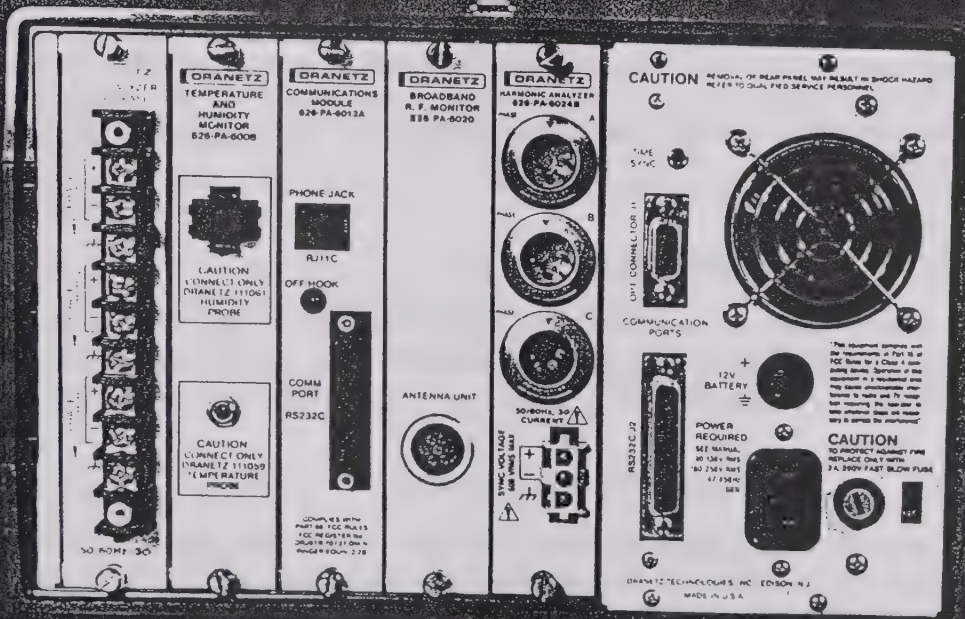


FIGURE 1-2. 626G Mainframe Rear Panel View.

1.4.4 Real Time Clock

A crystal-controlled (± 25 PPM stability) real-time clock built into the Mainframe is used as the source of time printouts. Using the front panel controls, the Operator may set the time.

1.4.5 Power Supply

A Power Supply module plugged into the rear of the instrument furnishes the power required by the Mainframe and its plug-in modules (refer to FIGURE 1-2).

The Power Supply module can be operated from either 115V ac or 230V ac. A 115V/230V switch, located on the Power Supply module's rear panel, is used to select the desired line voltage. A replaceable fuse on this panel provides overload protection for either line voltage selected.

1.4.6 Battery Pack (UPS)

A self-contained battery pack in the Mainframe provides between 10 to 40 minutes of uninterrupted operation if line power should fail. To increase back-up time, an external 12V battery source may be plugged into a connector on the Power Supply module. However, the Mainframe cannot be initialized by the battery source; it must be initialized by the ac line.

1.4.7 Communication Ports

The Communication ports protruding through the Power Supply rear panel contain a Time Synchronization Connector, Options Connector J1 (DCE configured), and RS-232 Connector J2 (DCE configured).

1.4.7.1 Time Synchronization Connector

The Time Synchronization feature, "Time sync", allows the Operator to synchronize even between two or more Mainframes. One Mainframe must be designated as the "master", and other Mainframes would then be designated as "slaves". The Mainframes would be connected as illustrated in FIGURE 1-3. The cable configurations are illustrated in FIGURES 1-5 and 1-6. FIGURE 1-5 illustrates the Time-Sync cable assembly for connecting master-to-slave units.

Follow the configuration of FIGURES 1-5 and 1-6 when connecting the cables between your Mainframes. (The maximum recommended cable lengths for Time-Sync and Time-Sync "daisy chain" are 50 feet.) The master automatically synchronizes the times between Mainframes within ± 30 milliseconds of each other after the required Time-Sync cables are connected. Time-Sync correction is performed once every minute.

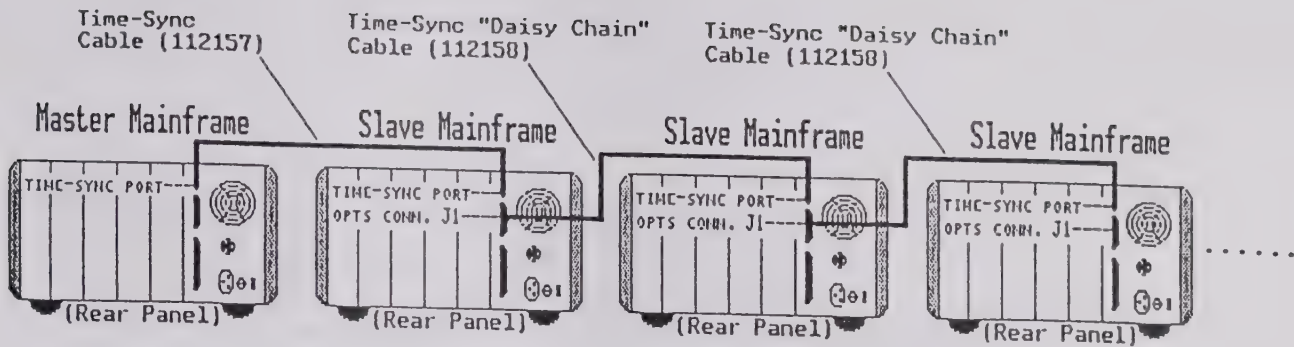


FIGURE 1-3. 626G MASTER-TO-SLAVE, SLAVE-TO-SLAVE CONNECTIONS.

NOTE

As long as events remain on the internal stack awaiting to be printed, the Mainframe will not perform a Time-Sync correction for that one minute. This insures that events are not printed out of order, since a time correction cannot be made while events are occurring.

The typical time difference between two simultaneous events between a master Mainframe and a slave Mainframe is 20 milliseconds.

The Time-Sync connector is located on the top left side of the Power Supply panel. The internal wiring references to the Communication Port are illustrated in FIGURE 1-4.

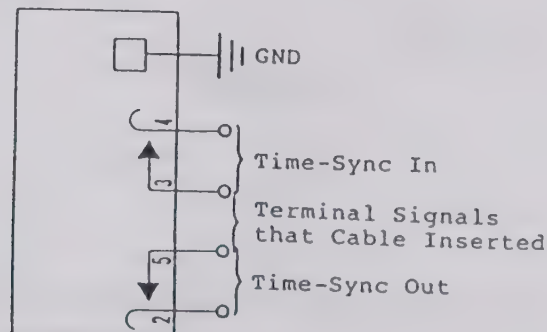


FIGURE 1-4. TIME-SYNC COMMUNICATION PORT WIRING.

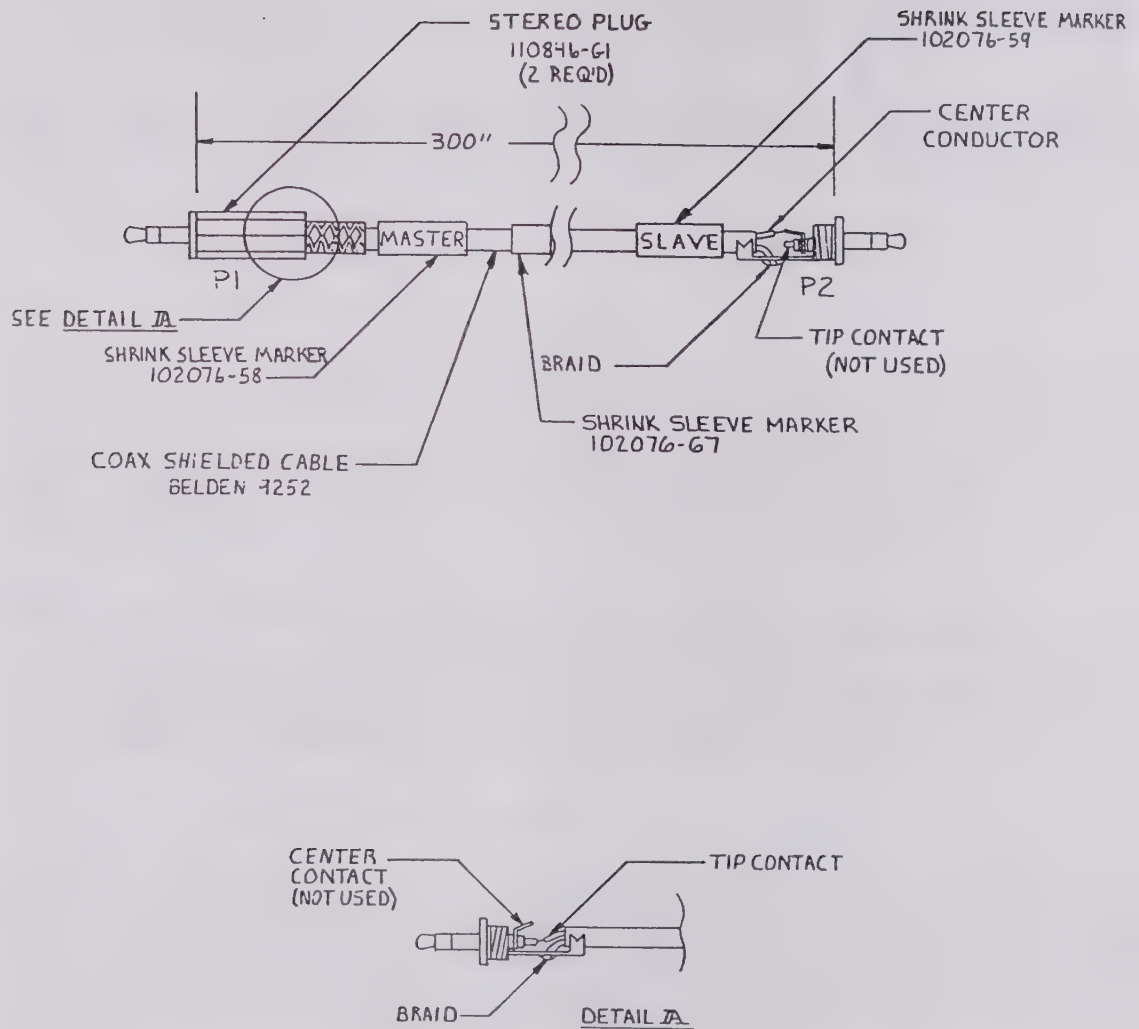


FIGURE 1-5. TIME-SYNC CABLE ASSEMBLY (112157).

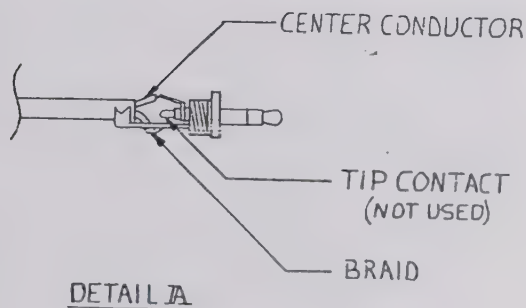
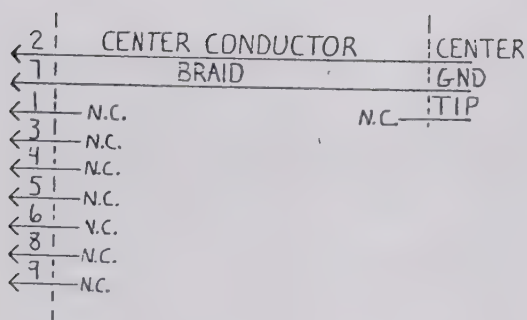
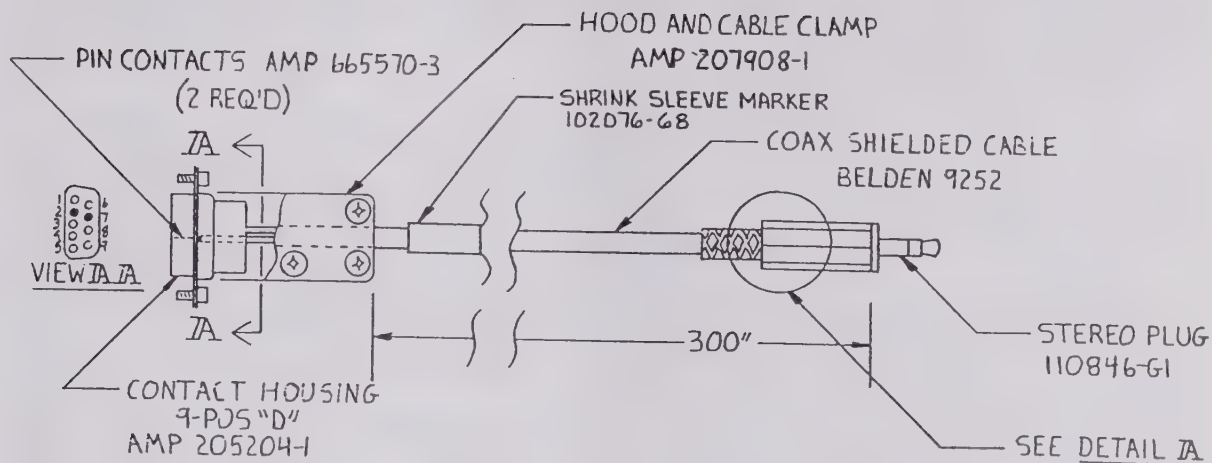


FIGURE 1-6. TIME SYNC "DAISY CHAIN" CABLE ASSEMBLY (112158).

1.4.7.2 Options Connector J1

The options pinout is shown in TABLE 1-1. The alarm contacts, described in Subsection 1.4.5, are rated at 25 volts, 100 mA maximum. The time-mark connections are provided as a standard feature. A dc voltage applied to these contacts produces a time-mark along with printout of time. This feature enables the Operator to correlate the time of an external event. Resolution of the time-mark is 10 milliseconds.

The isolated field contact supply (Option 102), rated at 5V dc with a 5K-ohm source impedance, is available for use with the 6007 and 6011 plug-in modules to enable activation from a dry contact. "Time-Sync thru" (pin 2) and "GND" (pin 7) are used to synchronize time events between Mainframes.

TABLE 1-1. PINOUT OF OPTIONS CONNECTOR J1.	
PIN NO.	FUNCTION
1	Alarm Contact (-)
2	Time-Sync Thru*
3	Time-Mark (-)
4	Field Contact Supply (-)
5	
6	Alarm Contact (+)
7	GND*
8	Time-Mark (+)
9	Field Contact Supply (+)
* Pins 2 and 7 are used for connecting the Time-Sync "daisy-chain" cable connection. (Refer to Subsection 1.4.7.1 for an explanation of the Time-Sync function.)	

1.4.7.3 RS-232C Port - Physical Description

Connector J2 provides an RS-232C compatible communications port for remote printout and control of the Mainframe. The port is configured as DCE (Data Communications Equipment), with a drive capability of approximately 50 feet. The definition and operation of each pin of the 25-pin female "D" connector (J2) used by the Mainframe is described in TABLE 1-2. Note that the RS-232C signal definitions are as viewed from a DTE (Data Terminal Equipment), or the device connected to the Mainframe.

TABLE 1-2. RS-232C PINOUT OF CONNECTOR J2.

PIN	NAME	FUNCTION	DIRECTION	DESCRIPTION OF OPERATION
1	GND	Protective Ground	Not Applicable	Shield of interface cable should be connected to this pin which is tied to the frame ground internally to the Mainframe.
2	XMT	Transmit Data	To Mainframe	Serial data output from the connected device is sent to the Mainframe, RTS and DTR must be TRUE for data to be recognized.
3	RCV	Receive Data	From Mainframe	Serial data outputted by the Mainframe to the connected device, provided that DTR and RTS are TRUE.
4	RTS	Request To Send	To Mainframe	This signal must be TRUE for the Mainframe to recognize the presence of a connected device. A FALSE state of more than 240 mSec causes the "RS-232C PORT LOST" message to be printed and appropriate action to be taken.
5	CTS	Clear To Send	From Mainframe	This signal will be TRUE as long as the ACIA and driver circuitry of the RS-232C port of the Mainframe are operational.
6	DSR	Data Set Ready	From Mainframe	Same as CTS.
7	GND	Signal Ground	Not Applicable	Internally connected in the Mainframe to pin 1.
8	DCD	Carrier Detect	From Mainframe (TRUE)	Provided for by the Mainframe as a true signal, enabling both sending and receiving.
15	XCLK	DCE Xmit Clock	From Mainframe	Xmit clock of data outputted by the Mainframe. Frequency = 16 x Baud Rate.
17	RCLK	DCE Rcv Clock	From Mainframe	Receive clock of data into the Mainframe. Internally jumpered in the Mainframe to XCLK and DTE Xmit Clock. Therefore, Xmit and Receive baud rates must be equal.
20	DTR	Data Terminal Ready	To Mainframe	This signal must be TRUE for the Mainframe to acknowledge the presence of a connected device. False state causes an immediate disabling of the port.

1.4.7.4 Dranetz RS-232C Interconnect Cable

Connection of the 626G to a CRT terminal or teletypewriter may be made with a Dranetz RS-232C cable (Dranetz P/N 103506). (Refer to FIGURE 1-7 for the RS-232C Interconnect Cable pinouts.⁷) The cable ties pins 4 and 20 internally to simplify connection to a terminal, and requires only a logical "high" signal to be fed to pin 20 (DTR).

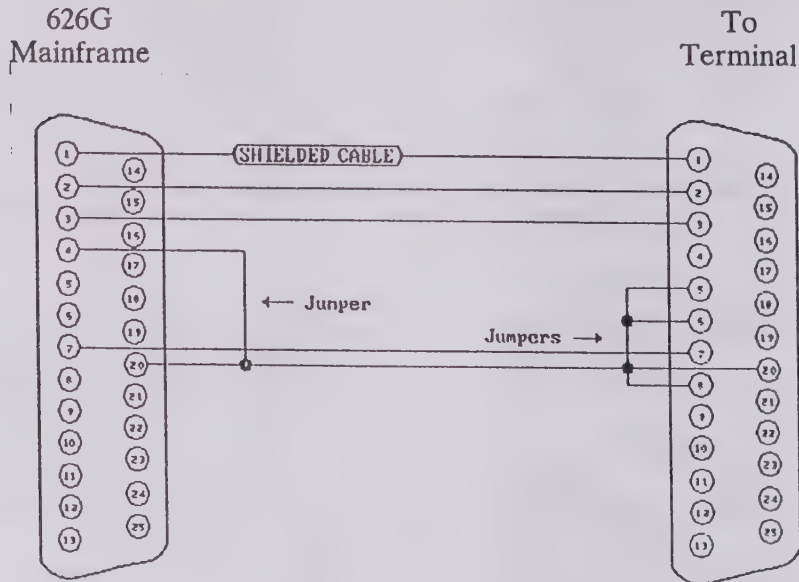


FIGURE 1-7. RS-232C INTERCONNECT CABLE PINOUTS (DRANETZ P/N 103506).

1.4.7.5 Data Format

Data transmitted from and received by the 626G via the RS-232C port should be 11-bit ASCII format serial data. The exact format is as follows:

1 Start Bit / 7 Bits of Data / 1 Parity Bit (Even) / 2 Stop Bits

Devices that require only 1 stop bit on received data should function properly even with the 2 stop bits (the second one is ignored). For characters sent to the 626G by an Operator, 1 stop bit is sufficient, since the time between characters will easily exceed the 1 stop bit duration. However, if the data are being sent by a high-speed device (such as a computer), sufficient time between characters should be allowed to prevent framing errors from occurring. (Framing errors can result in misinterpretation of data.)

⁷ If making your own cable, use a four-conductor shielded cable.

1.4.7.6 Baud Rate

The baud rate is selectable from 110 to 9600 by switching S1 on the A2 board. (Refer to the Service/Maintenance manual, Volume 2 of TM-112100-G4, for information on setting this switch.) The baud rates of the different switch positions are indicated in TABLE 2-3 of this manual. Transmit and Receive baud rates must be identical.

1.4.7.7 Operation of RS-232C Port and Printer

The 626G comes equipped with a "SMART" RS-232C port. After the unit is turned on, the RS-232 control lines are interrogated to determine the existence of a functional remote device (teletype, video terminal, etc.). (Note that when the unit is turned on, the "Printer On" Mode is active.) If this test fails for any reason, the normal "POWER ON" messages are accompanied by an "RS-232 LOST" message and a time printout. In this state, disabling the printer is not permitted. Thereafter, attempting to push [PRINT] causes a message such as the following to be printed:

PRINTER ON RS232 LOST 05/15/89 14:45:20

If RS-232C control lines are satisfied at any time thereafter, the message "RS232 RESTORED" and the time and date are printed, and normal operation is restored.

If during normal operation the RS-232C control lines become invalid, the "RS-232 LOST" message and the time and date are printed. The unit is then forced into the Printer On Mode. It will, however, "remember" the last status of the printer, and upon restoration of proper RS-232C operation, prints "RS-232 RESTORED" and the time and date. It then restores the previous status of the printer and prints "PRINTER OFF" and the time and date (if applicable).

NOTE

The "RS-232 LOST" message is accompanied by a "PRINTER ON" message only if the printer had been off at the time.

The "RS-232 RESTORED" message is accompanied by a "PRINTER OFF" message only if the printer was off at the time of the "RS-232 LOST" message.

1.4.7.8 Remote Operation

The 626G can be operated in the Remote Mode by connecting a remote device to its DCE configured RS-232C Communications Port (J2), and entering the tilde (~) character from the remote device. This places the Mainframe in the Remote Only Mode.

Local Mode

When the 626G is turned on, it starts in the Local Mode. In this mode, the unit responds only to commands entered from its front panel, and ignores inputs received through its RS-232C port, with one exception: the tilde (~) character. Each time this character is received, the 626G toggles between the Local and Remote Only Modes.

Remote Only Mode

When placed in the Remote Only Mode, the 626G responds only to commands received through its RS-232C interface. The only exceptions are the "OFF" and "RESET" positions of the FUNCTION key switch. As illustrated in TABLE 1-3, an ASCII character has been set equivalent to each front panel key, button, and switch position (except "OFF" and "RESET"). For the Operator's convenience, a pull-out tabbed card with all of the remote commands of TABLE 1-3 is supplied in this manual.

Using the Thermal Printer as a Line Printer

The Mainframe's thermal printer can be made to function as a line printer by executing the following ASCII commands:

~ (Tilde)	Puts the 626G in the Remote Only Mode.
{ (Open Brace)	Puts the 626G in Line Printer Mode.
} (Close Brace)	Takes the 626G out of the Line Printer Mode.

When used as a line printer, the 626G prints all data received via its RS-232C port. The data, however, is not echoed back to the source. Printing occurs in 20 columns with a carriage return automatically generated after the 20th column.

Available Software

Software is available through Dranetz Technologies for accessing the Mainframe remotely from a personal computer. These software programs⁸ are designed to be part of a larger monitoring system (DATA MANAGEMENT II handles between one and ten remote units, and DRAN-SCAN® can handle up to 64 remote units). These menu driven software programs can be used for programming the Mainframe and its plug-ins, retrieval of data, and data analysis. For more information on these software systems, contact your Dranetz Customer Service Representative or the Dranetz Order/Entry Department.

⁸When communication is established, the software automatically puts the unit into the Remote Mode. Depending on the type of communication you select, other commands are either entered at your computer keyboard or carried out automatically.

TABLE 1-3. 626G REMOTE COMMANDS.

Front Panel Control Switches and Buttons	Equivalent ASCII Command	Front Panel Control Switches and Buttons	Equivalent ASCII Command
<u>FUNCTION KEY Switch</u>		<u>Red, Green, and Yellow Keys</u>	
OFF	None: Local Only	[RANGE]	R
OPERATE	O	[INPUT]	J
PROGRAM	G	[ENTER]	E
CLEAR DATA	K	[LO LIMIT]	L
RESET	None: Local Only	[HI LIMIT]	H
		[SENS]	S
		[IMP SENS]	I
<u>PRINTOUT MODE Switch</u>		[F SENS]	F
SUMMARY ONLY	M	[FNC]	<
OUT-OF-LIMITS ONLY	U	[BURST SENS]	B
NORMAL	N	[0],[1],[2],...[9]	0 to 9
MAXIMUM DETAIL	X	:: (Decimal Point)	.
CALIBRATE	C	:: (Colon)	:
(System Check)		[CLEAR ENTRY]	Delete
<u>Upper Buttons</u>		<u>Lower Buttons</u>	
ALARM		Clock	/
(Turn Off)	Q	1 (CH 1)	a
(Turn ON)	A	2 (CH 2)	b
PRINTER	Z	3 (CH 3)	c
PRESET	T	4 (CH 4)	d
DATA	D	5 (CH 5)	e
PROG	P		
FEED	(Space)	<u>Special Command</u>	
<u>Output Display</u>		Remote Only/	
Stop	<CNTRL>+S	Local Mode Selection [†]	~
Resume	<CNTRL>+Q	Unit Status	&
[†] Tilde alternately selects Remote Only and Local Modes.			

1.4.8 Factory Preset Program

The factory preset program is a default setting for the Mainframe's programmable parameters. If the programmed parameters are lost (in the event of memory loss, for example), the 626G defaults to the factory preset program.

1.4.9 Time-mark Circuit

The time-mark includes an optically coupled time-mark circuit which causes the 626G to print a time-mark (an asterisk followed by Mainframe time) whenever the externally supplied dc voltage appears at the rear panel options connector. This feature is useful in providing time correlation with an external event. Time-mark specifications are listed in TABLE 1-4.

TABLE 1-4. TIME-MARK SPECIFICATIONS	
Input Voltage	5 to 12 V dc.
Input Circuit	4 mA @ 5V typical, 24 mA @ 12V typical.
Timing of Applied Voltage	Operates on Leading Edge.
Pulse Width	100 uSec Minimum.
Pulse Rate.....	100 per Second.
Off Period.....	500 uSec Minimum.

1.5 SPECIFICATION SUMMARY

TABLE 1-5 (on the following page to fit it in its entirety) summarizes the specifications of the 626G Mainframe.

1.6 STANDARD ACCESSORIES

<u>Part #</u>	<u>Quantity</u>	<u>Description</u>
TM-112100-G4	One	626G Operator's Manual
107506	One	Mating Connector for 12V Battery
104943 (or)	One	AC Line Cord (For customers requesting 115V line cord)
110726	One	AC Line Cord (For customers requesting 230V line cord)
<u>AMP</u>		
205204-1 (One)	One Set	Connector Housing
665570-3 (Nine)		Pin
207908-1 (One)		Hood & Cable Clamp
110289-1 (One)		Instruction Decal
		} Options Connector P1
102714	Three	Thermal Paper
103418	One set	Cleaning Paper

TABLE 1-5. MAINFRAME SPECIFICATIONS

Plug-in Module Capacity	One through five.
Time Clock	Crystal-controlled, ± 25 PPM, keyboard entry. Accurate to approximately 2 seconds per day
Alarm Circuits..... (Activated by a Printable Disturbance)	1) Audible alarm; 1-second, self clearing, keyboard selectable. 2) Alarm contact closure.
Environmental Specs	
Operating.....	10° to 40°C (50° to 104°F)
Storage	-20° to 55°C (-4° to 131°F)
Humidity	10% to 90% (non-condensing)
Power Requirements	90 to 130V rms (for 115V operation) or 180 to 250V rms (for 230V operation), both at 47 to 450 Hz, 50W nominal, +12V dc @ 3A nominal.
UPS Capacity	10 to 40 minute operation on internal battery pack. Six to ten hours to recharge.
Size (Overall)	8" high by 12" wide by 16" deep (does not include shipping covers). (Approximately 20.5 cm by 30.5 cm by 41 cm.)
Weight (Fully Loaded)	Up to 22½ pounds. (Approximately 10 kg.)
Data Output	Built-in 160 dot thermal line printer. RS-232C Interface with control capability.

1.7 OPTIONAL ACCESSORIES

See step (3) in Subsection 1.8 for information on how to obtain Volume 2 (Service/Maintenance manual) listed below.

<u>Part #</u>	<u>Quantity Required</u>	<u>Description</u>
TM-112100-G4 Vol. 2	One	626G Service/Maintenance Manual
103506	One	Interface Cable for Remote Devices
112157	One	Time Sync Cable (25 ft.)
112158	One ⁹	Time Sync Cable (25 ft.)

⁹One per Slave-to-Slave Connection.

When factory repair is required, proceed as follows:

1. Contact Dranetz Customer Service Department to obtain an authorization number for Factory repair.

Telephone No:	(201) 287-3680	Telex:	499-7808
TWX:	(710) 997-9553	Cable:	DRANETZ
FAX:	(201) 248-9240		
2. Fill out the REPAIR/SERVICE ORDER form enclosed in this manual. Ship it along with the malfunctioning equipment to Dranetz Customer Service Department, 1000 New Durham Rd. Edison, New Jersey 08818.
3. In this manual you have been supplied a Control Form with a registration number on it. The purpose of this form is to allow you to obtain the Volume 2 Service/Maintenance manual for the 626G. Fill out and return this form if you want to obtain Volume 2. (If this form is missing, contact Dranetz Customer Service Department and request a replacement.)

SECTION II INSTALLATION AND OPERATION

2.1 GENERAL

This section contains the installation, programming, and operating instructions for the 626G Mainframe.

2.2 UNPACKING

Carefully open the upper end of the shipping container and remove its contents. DO NOT discard the shipping container and packaging materials until after inspecting the instrument for any shipping damage. Report any damage caused by shipping and handling immediately to your carrier.

In the event that any physical damage does exist, use the original packing case and materials to return the instrument to Dranetz Customer Service Department. This should be done, however, only after an insurance claim has been filed with your underwriter or carrier, or both. Also, before returning any equipment to Dranetz Customer Service Department, obtain a return authorization number by calling Dranetz Customer Service Department (see the REPAIR/SERVICE ORDER form enclosed in this manual).

2.3 INSTALLATION WARNINGS

WARNING

Be sure that the Mainframe and all of the power connected to its plug-in modules are first turned off before proceeding with any installation.

Because of possible shock or fire hazards, connection of this instrument should be performed in compliance with the National Electric Code (ANSI C1) and/or any other requirements which are applicable. Installation, operation, and maintenance should be performed ONLY by qualified personnel. Qualifications for performing such procedures should be self-determined.

2.4 LOAD RATINGS

The 626G standard Mainframe has an upper limit of the combined total load rating of its installed plug-in modules. The overall Mainframe capacity is set at 20 units. The individual modules (existing as of this printing) have load ratings as indicated in TABLE 2-1.

TABLE 2-1. LOAD RATING FOR PLUG-INS

Plug-In	Load Rating
626-PA-6001	2 Units
626-PA-6001 with extra option board.....	3 Units
626-PA-6002A	2 Units
626-PA-6002C	2 Units
626-PA-6003	4 Units
626-PA-6005	2 Units
626-PA-6006	2 Units
626-PA-6007	1 Units
626-PA-6008	2 Units
626-PA-6009	4 Units
626-PA-6011	1 Units
626-PA-6012	2 Units
626-PA-6012A	3 Units
626-PA-6013	2 Units
626-PA-6014	1 Units
626-PA-6015	4 Units
626-PA-6018	4 Units
626-PA-6020	4 Units
626-PA-6024A	4 Units
626-PA-6024B	4 Units
626-PA-6025	4 Units
626-PA-6030	6 Units
626-PA-6037	1 Units
626-PA-6038	1 Units
626-PA-6040	6 Units

NOTE

When selecting modules for installation into any Mainframe, verify that the sum of the load ratings of the installed modules DOES NOT exceed 20 units.

2.5 OPERATING CONTROLS

(Refer to FIGURE 2-1 for the front panel controls and indicators of the 626G.)

The functions of the operating controls and indicators primarily concerned with various plug-in module operations are described in TABLE 2-2. The controls described include the two key switches, two rows of black selector buttons, green and yellow keys, and the various LEDs. The functions of the red front panel keys are not listed, nor are they indicated in the front panel drawing. This is because the functions of these keys differ with each plug-in module. The individual Volume 1 plug-in manuals describe which of these keys pertain to the particular plug-in, along with their functions when used with the plug-in.

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626-PA-6001	2 Units
626-PA-6001 with extra option board.....	3 Units
626-PA-6002A	2 Units
626-PA-6002C	2 Units
626-PA-6003	4 Units
626-PA-6005	2 Units
626-PA-6006	2 Units
626-PA-6007	1 Units
626-PA-6008	2 Units
626-PA-6009	4 Units
626-PA-6011	1 Units
626-PA-6012	2 Units
626-PA-6012A	3 Units
626-PA-6013	2 Units
626-PA-6014	1 Units
626-PA-6015	4 Units
626-PA-6018	4 Units
626-PA-6020	4 Units
626-PA-6024A	4 Units
626-PA-6024B	4 Units
626-PA-6025	4 Units
626-PA-6030	6 Units
626-PA-6037	1 Units
626-PA-6038	1 Units
626-PA-6040	6 Units

NOTE

When selecting modules for installation into any Mainframe, verify that the sum of the load ratings of the installed modules DOES NOT exceed 20 units.

2.5 OPERATING CONTROLS

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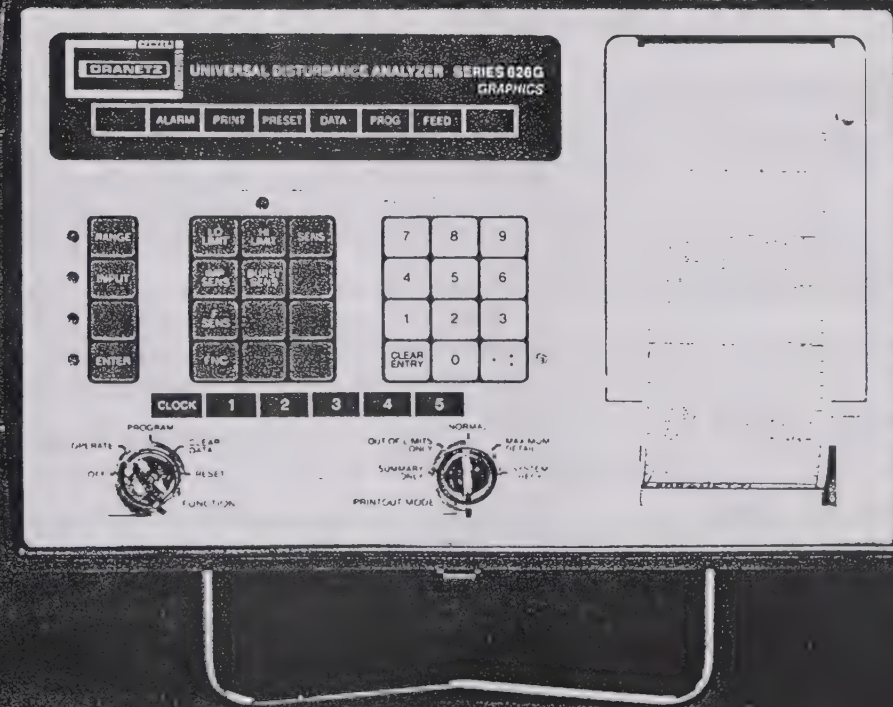


FIGURE 2-1. FRONT PANEL OF MAINFRAME.

TABLE 2-2. 626G MAINFRAME CONTROLS. (PAGE 1 OF 2.)

Item	Function
[ALARM] button (black)	Each time it's pressed, it alternately enables or disables the alarm circuit and the printer echos either "ALARM ON" or "ALARM OFF" and the time and date. (With some types of disturbances or event changes, this causes a 1-second audible tone to sound.)
[PRINT] button (black)	Each time it's pressed, it alternately enables or disables the thermal printer and the printer echos either "PRINTER ON" or "PRINTER OFF" and the time and date. In the latter case, further printing is inhibited unless one of the following occurs: 1. The power is turned off or on, 2. The end of day produces an accumulated daily summary, 3. RS-232C is lost, or 4. Power is lost.
[PRESET] button (black)	(Specific plug-in functions)
[DATA] button (black)	When pressed while the function key switch is in "OPERATE" position, unit prints date, time, and contents of the daily accumulator in each of its channels (instrument slot positions 1 through 5) in sequence.
[PROG] button (black)	When pressed while the FUNCTION key switch is in "OPERATE" position, unit prints date, time, and contents of the daily accumulator in each of its channels (instrument slot positions 1 through 5) in sequence.
[FEED] button (black)	When pressed, causes several lines of paper to feed out of the thermal printer.
[CLOCK] button (black)	When pressed while the FUNCTION key switch is in "PROGRAM" position, enables Operator to set time and date.
[1] to [5] buttons (black)	When pressed while the FUNCTION key switch is in "PROGRAM" position, selects a plug-in channel for programming.
[ENTER] key (green)	When pressed, enters numerical keyboard constants into the real-time clock or plug-in program.
Numerical Keyboard	Used to enter constants when setting the time, date, [0] to [9] and programming.
[:] key (yellow)	Used to enter colons and decimal points in the numerical entries.
[CLEAR ENTRY] key (yellow)	Clears the last numerical entry.

TABLE 2-2. 626G MAINFRAME CONTROLS. (PAGE 2 OF 2.)

Item	Function
FUNCTION key switch	
OFF:	Turns instrument off.
OPERATE:	Normal operating position. Programming switches are disabled and key may be removed to prevent unauthorized use of instrument. However, the top row of buttons (ALARM, PRINT, etc.) may still be activated.
PROGRAM:	Enables Operator to program real time, thresholds, or a selected channel.
CLEAR DATA:	Clears daily accumulators, removing data collected that day, but doesn't affect real time.
RESET:	A hard wire reset to the central processing unit (CPU). Activates system initialization routine in the same manner as a "Power On" function. Does not reset the time, date, or any program information.
PRINTOUT MODE key switch	
	Prints the data in different detail, depending on the switch position. The key (identical to the FUNCTION key switch key) can be removed in any position.
SYSTEM CHECK:	Puts all channels in the System Check Mode, and a printout (in sequence) is produced by self-contained calibrated signals.
MAXIMUM DETAIL:	Produces a detailed printout (a function of the plug-in).
NORMAL:	Produces a less detailed printout (a function of the plug-in).
OUT-OF-LIMITS ONLY:	Prints disturbance data only when the disturbance is out of limits.
SUMMARY ONLY:	Printer is inhibited. All data are still loaded into the daily accumulators. Provides a Daily Summary each day at midnight.
LINE-BATT indicator (LED)	Green LINE indicator lights when ac power is present. Red BATT indicator lights when power is lost and the unit is automatically switched to its battery source.
Other indicators (LEDs)	Indicators light to prompt Operator on what keys to press at any given step during the programming sequence.

2.6 MAINFRAME INITIALIZATION OPERATING PROCEDURES

The following subsections describe basic operations of the 626G that pertain to Mainframe initialization.

2.6.1 Power On

Before turning the Mainframe on for the first time, the Power Supply selector switch should be set to the appropriate voltage range: 115V or 230V (see section 2.8). Plug one end of the Mainframe's power cord into its rear panel receptacle; plug the other end into an appropriate ac power source.

With the PRINTOUT MODE key switch in the desired position¹, turn the Mainframe on by turning the FUNCTION key switch from "OFF" to "OPERATE". Each time the unit is turned on, the printer prints a "POWER ON" message along with the date and time, mode of selected function, and Printout Mode. An example of the "POWER ON" message, assuming the PRINTOUT MODE key switch was turned to "NORMAL", is illustrated below.²

NOTE

If an external device is not connected to the Mainframe, an "RS232 LOST" message will also be printed in the "POWER ON" message.

POWER ON RESET
04/03/89 14:04:55
LOCAL MODE
04/03/89 14:04:55
OPERATE MODE
ALARM OFF
PRINTOUT NORMAL

Self-Diagnostics

When power is applied, the instrument performs diagnostics on its own non-volatile internal memory. Memory is maintained during power off intervals by an internal battery pack, therefore, the Mainframe does not lose its programming or time clock during power off. Each time the instrument is turned on, all plug-in modules are re-initialized to their previous programming, even after extended intervals of non-usage. If a normal "POWER ON RESET" message is generated, the memory is validated.

¹The unit will not power on if this key is turned to "SYSTEM CHECK".

²Printouts produced by the 626G thermal printers should be read from the top down.

If the self-diagnostics on the internal memory determine that the memory is invalid (for example, if the control board which controls the real time for the Mainframe was replaced, or, if the battery supply was allowed to run low), the 626G prints:

MEMORY INVALID POWER ON RESET

This indicates that the operator must program a new time and date as well as any Operator-set programming for the individual plug-ins. If this is not done, the time and date are reset to 00/00/00 and 00:00:00, and the plug-ins revert back to their programmed factory-preset values.

Another self-diagnostics feature tests the CPU RAM. CPU RAM Failure would be indicated by a "CPU RAM FAILED" message on the printout. (See Section III, OPERATIONAL TEST, if this message occurs.)

2.6.3 Setting Date and Time

This Mainframe function should be performed when real time must be reset, such as if time zones are switched, going from standard to daylight savings time, if back-up power fails, and so forth. The procedures are detailed in the following two subsections.

2.6.3.1 Setting Date

- 1) Press [CLOCK] and set the FUNCTION key switch to "PROGRAM". The existing (old) date and time are printed, followed by an "ENTER DATE" message³:

PROGRAM MODE 05/20/89 15:30:18 ENTER DATE (MM:DD:YY)

- 2) The two right-most cueing indicators above the numerical keyboard light, indicating that two⁴ yellow numerical keys must be pressed in order to enter the month (symbolized by "MM" on the printout). Upon entering the month, the two indicators go out and the cueing indicator adjacent to the semicolon key lights. When the semicolon key is pressed, the same two cueing indicators above the numerical keyboard light again. This procedure continues for the day ("DD") and the year ("YY").

³If an incorrect key is pressed, press [CLEAR ENTRY] to clear the entire numerical sequence and then re-type the entries. This applies to all numerical programming sequences.

⁴Leading zeros must be entered; for example, press [0] [9] for September.

- 3 After the year is entered, the indicator next to the [ENTER] key lights. Press [ENTER] to register the date on the instrument. The cueing indicator turns off and a printout similar to the following is printed:

05/20/89 15:35:28
ENTER TIME (HH:MM)

2.6.3.2 Setting Time

- 1) The two right most cueing indicators above the numerical keyboard light again, indicating that two⁵ keys must be pressed to enter hours (symbolized by "HH" on the printout). After hours are entered, the two indicators go out and the cueing indicator adjacent to the semicolon key lights. When the semicolon key is pressed, the same two cueing indicators above the numerical keyboard light again, indicating that minutes should be entered.
- 2) When both the minutes and hours have been entered, the indicator next to the [ENTER] key lights. The time is not registered until the [ENTER] is pressed (this allows precise synchronization). Once [ENTER] is pressed, the cueing indicator turns off and a printout such as the following is printed:

05/20/89 15:36:07
ENTER DATE (MM:DD:YY)

After proper time and date have been entered, the Operator may disregard the "ENTER DATE" message (unless it is desired to change the date) and proceed to program a plug-in channel, or, return the key switch to "OPERATE MODE" and resume operation.

2.7 GENERAL DESCRIPTIONS OF OTHER OPERATING PROCEDURES AND PRINTOUTS

The following information is presented to give an overview of the instrument's operation. Although some of the printouts necessarily include specific plug-in programs and data, only details common to overall operation (with any plug-in types) are covered in the text.

2.7.1 Program Summary

To obtain a summary of the program setups stored in the plug-ins, set the FUNCTION key switch to "OPERATE" and press [PROG].

⁵Leading zeros must be entered. Enter the time in a 24-hour format; for example, press [1] [3] for 1:00 pm, [1] [4] for 2:00 pm, etc.

For Example:

Assume a 626-PA-6001 plug-in is installed in each of channels 1, 2, and 3, and that channels 4 and 5 are empty. Note that the printout is identified as "PROGRAM SUMMARY", time and date are given, and each plug-in is identified by slot position and type. In the example below, the values printed during the Program Summary are the factory preset values for the 6001 plug-ins in channels 1 and 2, but are Operator-set values for the 6001 plug-in in channel 3.

```

PROGRAM SUMMARY
05/24/89 15:30:08

```

```

CH 1

```

```

626-PA-6001

```

```

RANGE F.S      200V
V HIGH LIMIT   125V
V LOW LIMIT    105V
VOLTAGE SENS    002V
FREQ SENS      00.5HZ
IMPULSE SENS   0100V

```

```

CH2

```

```

626-PA-6001

```

```

RANGE F.S      200V
V HIGH LIMIT   125V
V LOW LIMIT    105V
VOLTAGE SENS    002V
FREQ SENS      00.5HZ
IMPULSE SENS   0100V

```

```

CH3

```

```

626-PA-6001

```

```

RANGE F.S      400V
V HIGH LIMIT   140V
V LOW LIMIT    095V
VOLTAGE SENS    005V
FREQ SENS      01.0HZ
IMPULSE SENS   0500V

```

2.7.2 Data Summary

To obtain a summary of data, set the FUNCTION key switch to "OPERATE" and press [DATA]. The Data Summary provides the date, present time, present values, and total number and worst-cases of each type of disturbance for each channel of each plug-in.

For Example:

With three 626-PA-6001 plug-ins installed in the Mainframe, disturbance data recorded on channel 1 are printed out (top of next page). (Assume that no data have been recorded on channels 2 and 3.)

```
DATA SUMMARY
05/24/89 16:44.15

CH1
626-PA-6001
IMP 0377V 002 HT
CH2
626-PA-6001
CH 3
626-PA-6001
```

NOTE

HT stands for "hits" recorded; 002 indicates two impulse "hits", with the largest being 377 volts.

2.7.3 System Check (For Checking Plug-ins)

NOTE

This is not the Mainframe's System Check routine. This System Check routine verifies the performance of the installed plug-in modules, not the Mainframe itself. For information of the Mainframe's System Check routine, refer to Section III.

To activate a System Check, thereby verifying the performance of the installed plug-ins, momentarily set the PRINTOUT MODE key switch to "SYSTEM CHECK", and then back to its original setting. This replaces the normal inputs to all of the plug-ins with internally generated precise test inputs.

The printout which follows the System Check indicates the results of the processed test inputs. (Printouts of the System Check follow in sequence from the plug-in modules installed in slots one through five.) Each test printout must then be checked against the Operator's Manual of its referenced plug-in to determine if the accuracy of the plug-in is within tolerances. If the values are within the listed tolerances in the Operator's Manual, the plug-in is operating correctly.

For Example:

The following printout contains test data for plug-ins installed in channels 1, 2, and 3. Note that the printout starts and ends with asterisks, signifying the beginning and end of the System Check. Assume that you have installed a 6001 plug-in in slot 1, a 6006 plug-in in slot 2, and a 6005 plug-in slot 3.

```

***SYSTEM CHECK***
05/25/89  16:15:43

      CH1
    626-PA-6001
IMP      + 0160 V PK
PRESENT V 120.4 V
PRESENT F 050.0 HZ
      CH2
    626-PA-6006
IMP      + 0160 V PK
PRESENT V 030.0 V
      CH3
    626-PA-6005
IMP      + 0150 A PK
PRESENT A 010.0 A
*****

```

If you were to compare the System Check readings of each of these three plug-ins with the System Check tolerances in their respective plug-in manuals, you would find that they are all within the listed tolerances. This indicates that they are all operating properly and do not require calibration. (The individual plug-in manuals describe the procedures to follow if calibration is required.)

2.7.4 Internal Battery Pack (UPS)

If an ac power failure should occur, the Mainframe's battery pack maintains full operation for up to 40 minutes.⁶ The green LINE indicator on the front panel goes out and the red BATT indicator lights. The printer outputs a "BATTERY ON" message (example below) which also provides the time and date of this occurrence.

```

      BATTERY ON
05/26/89  15:40:32

```

If the output of the internal battery pack drops below operating level, a "POWER LOSS" message is printed (see below), indicating that no further data may be processed. The unit is then automatically switched off. Time, date, data, and program information will be valid for up to 2 weeks after a power loss.

```

      POWER LOSS
05/30/89  17:08:11

```

⁶Battery pack operating time depends on the state of the battery charge and the loading from the plug-in modules.

When line power is restored, a "POWER RESTORED" message (see below) is printed.

POWER RESTORED 05/30/89 17:09:45

NOTE

The internal battery pack recharges to full capacity in approximately 10 hours with the Mainframe connected to an ac line and operating.

When the instrument is turned off, a "POWER OFF" message is printed (see below) along with date and time.

POWER OFF 05/30/89 17:12:38

2.7.5 Factory Preset Program

In the event the last program is lost, the program base for the plug-ins is automatically derived from the factory-preset, non-volatile memory (located in the plug-in). Standard programs are normally prepared for hard storage at the factory, and may be recalled upon Operator demand. The instrument reverts to the hard storage program whenever a "Memory Invalid" condition exists, or when the Operator presses the [PRESET] button while in the PROGRAM Mode with the appropriate module selected.

2.7.6 Short Term Accumulator

The internal stack is capable of handling at least 32 disturbances, more if multiple disturbances occur in a single time frame (10 mSec). Data are sent to the stack and are then printed.

In a case where the data output cannot keep up with the data input, the stack overflows. While the stack is full, the worst case data are sent to the Short-Term Accumulator, along with the total number of "hits" (disturbance occurrences) recorded. Whenever the Short-Term Accumulator's data are printed, the data are then cleared from memory.⁷ The printout format is as follows:

SUMMARY MODE				
CH4				
626-PA-6001				
V LO	104.4V	001	HT	
SAG	098.6V	002	HT	
IMP	0166V	014	HT	

The above printout indicates that the 6001 plug-in in channel 4 recorded one voltage low (104.4V), two sags with the worst being 098.6V, and 14 impulses (spikes) with the most severe being 166V.

2.7.7 Daily Summary

When the real time clock reaches 23:59:59.59, presumably at mid-night, it resets to 00:00:00.00 and prints a daily summary which consists of all the accumulated data of that day. It then resets to begin accumulation of data for the new day.

An example daily summary for May 25th would read as follows:

DAILY SUMMARY				
05/26/89 00:00:00				
CH1				
626-PA-6001				
SAG	104.7V	001	HT	
IMP	244V	003	HT	

The above printout indicates that the 6001 plug-in in channel 1 recorded one voltage sag (104.7V) and three impulses (spikes), with the most severe being 244V. (Note that although the daily summary is for May 25, the date the daily summary is being displayed is May 26.)

⁷ Data is sent to the printer and to the serial port simultaneously. Communication modules are available that provide an additional buffer for data storage. The Mainframe can then be contacted remotely for periodic data retrieval.

2.8 POWER SUPPLY AC VOLTAGE SELECTION

A 115/230V selector switch on the rear panel of the Mainframe's Power Supply Module allows operation from either a 115V or 230V (nominal) ac power source. To set the switch for the desired power line voltage, proceed as follows.

- 1) Set the FUNCTION key switch to "OFF".
- 2) Turn off the power source and disconnect the power cord from the unit.
- 3) Using a small screwdriver or other suitable tool, set the 115V/230V switch to the desired position.
- 4) For 115V operation, install the ac line cord (P/N 104943) between the unit and the 115V power source.

For 230V operation, install the ac line cord (P/N 110726) between the unit and the 230V power source.

NOTE

AC line cord P/N 104943 is a standard accessory supplied when the 626G is factory preset to 115V. When the unit is factory preset to 230V, or when operating from a 230V power source, ac line cord P/N 110726 (or similar) is mandatory.

2.9 BAUD RATE SELECTION

The Mainframe's baud rate is factory preset to 1200. The rotary switch that allows the baud rate to be changed is internal to the Mainframe, therefore, information on changing the baud rate is contained in Volume 2 of this manual.

WARNING

It is extremely important that only qualified individuals perform internal service (such as changing the baud rate) on the Mainframe. Qualifications for performing such service should be self-determined.

2.9.1 Reference Table of Baud Rates

TABLE 2-3 below is provided only as a reference for the baud rate settings of rotary switch S1. Switch S1 is located on the Control Board, the second PC board from the right when facing the rear of the 626G. For instructions on removal of this board for baud rate selection refer to Volume 2.

TABLE 2-3. ROTARY SWITCH (S1) BAUD RATE SETTINGS			
Switch Position		Baud Rate	
0.....		50	
1.....		75	
2.....		110	
3.....		134	
4.....		150	
5.....		300	
6.....		600	
7.....		1200	
8.....		1800	
9.....		2000	
A.....		2400	
B.....		3600	
C.....		4800	
D.....		7200	
E.....		9600	
F.....		19200	

SECTION III OPERATIONAL TEST

3.1 GENERAL

In general, the 626G Mainframe does not require an Operational Test. To initiate the operational testing of the installed plug-in modules, turn the PRINTOUT MODE key switch to "SYSTEM CHECK" and back to its original position while the Mainframe is on.¹

3.2 MAINFRAME'S SELF-DIAGNOSTICS TEST

A self-diagnostics routine in the 626G Mainframe tests its Central Processor Unit's Random Access Memory (CPU RAM) every time the unit is turned on. If no message is printed regarding CPU RAM immediately following power on, then the CPU RAM is functioning properly. However, if a "CPU RAM FAILED" message is printed, the Mainframe's CPU RAM requires service. If this message appears, contact Dranetz Customer Service Department (refer to Subsection 1.8, FACTORY REPAIR) for further instructions.

A self-diagnostics test of the Mainframe's non-volatile internal memory is also performed automatically whenever power is restored to the unit. If a "MEMORY INVALID" message is printed immediately following power on, the system clock and the plug-in's parameters have to be reset.²

3.3 CALIBRATION INTERVAL

The recommended calibration interval for this unit is once every 12 MONTHS.

We recommend that you return the unit to the factory for calibration. If you decide to do so, first contact Dranetz Customer Service Department to obtain an authorization number.

Telephone No: (201) 287-3680

Telex: 499-7808

TWX: (710) 997-9553

Cable: DRANETZ

FAX: (201) 248-9240

Then fill out the Repair/Service Order form³ enclosed in this manual and ship it along with the unit to Dranetz Customer Service Department.

Dranetz Customer Service Department
Dranetz Technologies, Inc.
1000 New Durham Rd.
Edison, NJ 08818

¹Refer to Subsection 2.7.3 for information on the plug-in system check.

²If the clock is not re-set by the Operator, time and date default to 00:00:00 and 00/00/00, and the plug-ins default to their factory preset programs.

³If this form is missing, contact Dranetz Customer Service Department for a replacement.

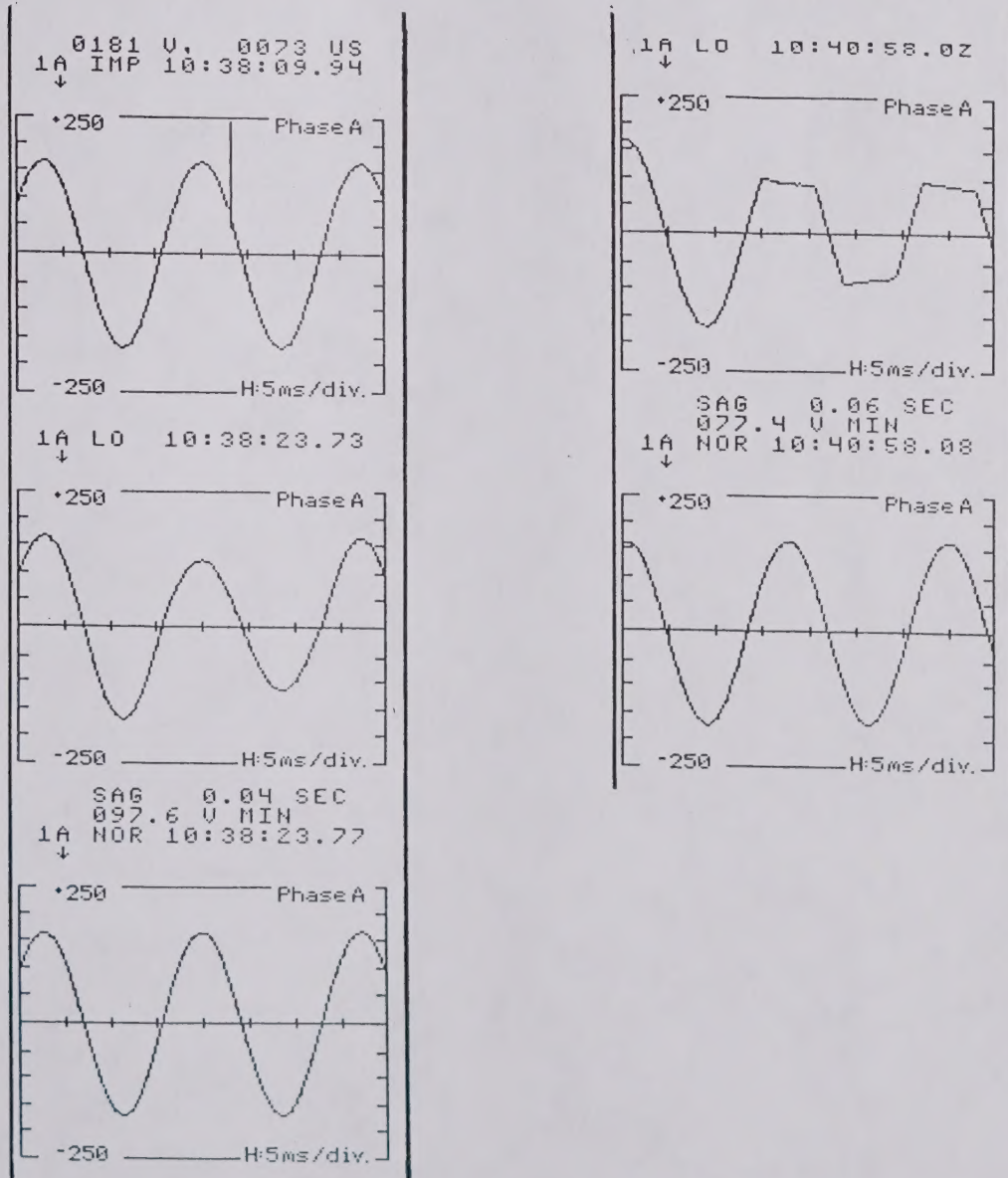
This unit also contains an internal battery pack. For optimal use and reliability, we recommend that you have the battery pack replaced once every **2 YEARS**.

Replacement is performed at Dranetz Customer Service Department by following the same procedure described above.

APPENDIX A

SAMPLE GRAPHIC PRINTER OUTPUT

The 626G comes equipped with a continuous dot thermal printer capable of printing both alpha-numeric and graphical data supplied to the Mainframe by its plug-ins. (Not all plug-ins are designed for outputting graphical data.) The sample printouts below include both textual descriptions and the accompanying waveforms. The data was collected and printed using a 626G with a 6030 plug-in installed in channel 1.



MP MASTER



MA23109